Epithelial stem cells of the prostate and their role in cancer progression.

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Public Summary:
Prostate cancer is a leading cause of cancer-related death in adult men. It can regress dramatically upon antihormonal therapy, but it often recurs in a more aggressive, androgen-independent form. Defining the prostate tissue stem cells (PrSCs) and their involvement in cancer initiation and maintenance may lead to better therapeutics. Using a tissue-regeneration model in which dissociated prostate epithelial cells mixed with inductive mesenchyme give rise to prostatic tubules, we have identified a small population of prostate cells that contains multiple stem cell characteristics. In this system, prostate cancer can be initiated by autocrine or paracrine growth factor signaling and intracellular overexpression of genes often found mutated in human prostate cancer. Using an in vitro prostate sphere assay, we further defined the PrSC population and demonstrated their self-renewal and multilineage differentiation capabilities. Microarray analyses of the stem- and non-stem-cell populations have assisted us in finding and evaluating additional markers that can better define the PrSC population and further delineate the different cell types of the prostate, including those that serve as the target cell for tumor initiation.

Scientific Abstract:
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